



## **Waller Mill Reservoir 2013 Fisheries Management Report Virginia Department of Game and Inland Fisheries**

This 360-acre water supply reservoir is owned by the City of Williamsburg and is located within the boundaries of Waller Mill Park, York County. The reservoir was originally constructed in 1942 with the intention of providing water to Camp Peary, but was sold three years later to the City of Williamsburg in 1945. The reservoir is divided into two sections by the crossing of Airport Road. A navigable tunnel connects the upper and lower portions of the reservoir. The upper basin accounts for roughly a third of the reservoir's acreage. The lower basin provides greater fishing access to deeper water and larger creek arms. The heavily wooded shoreline and the many branches and coves of the reservoir provide a very pleasing environment in which to hike, bike, fish and pleasure boat. Waller Mill Reservoir has been known to produce some large striped bass (some in the 20 to 25 pound range). The reservoir provides a rather diverse fishery that should interest anglers.

The Virginia Department of Game and Inland Fisheries conducted electrofishing surveys of Waller Mill Reservoir on April 23, 2012. The last electrofishing survey was on April 15<sup>th</sup>, 2011. The 2012 sample was conducted in 4 different regions of the reservoir to get a broad spectrum of the present fish assemblage. The water temperature during the 2012 survey ranged from 18.1°C to 18.7°C. Electrofishing efforts consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. The electrofishing effort of 1.33 hours yielded 15 fish species. This report will concentrate primarily upon the five fish species of largemouth bass, bluegill, black crappie, redear sunfish and yellow perch. Data collected from the survey will be included to expand the information for certain species.

Table 1. Summary of the electrofishing surveys April 15<sup>th</sup>, 2011 for the primary fish species of Waller Mill Reservoir.

<b>Species</b>	<b># Collected</b>	<b>Largest Length</b>	<b>Average Length</b>
<b>Largemouth Bass</b>	124	20.94"	11.23"
<b>Bluegill</b>	186	8.11"	5.05"
<b>Black Crappie</b>	16	13.7"	9.61"
<b>Redear Sunfish</b>	34	10.55"	7.79"
<b>Yellow Perch</b>	23	8.78"	6.73"

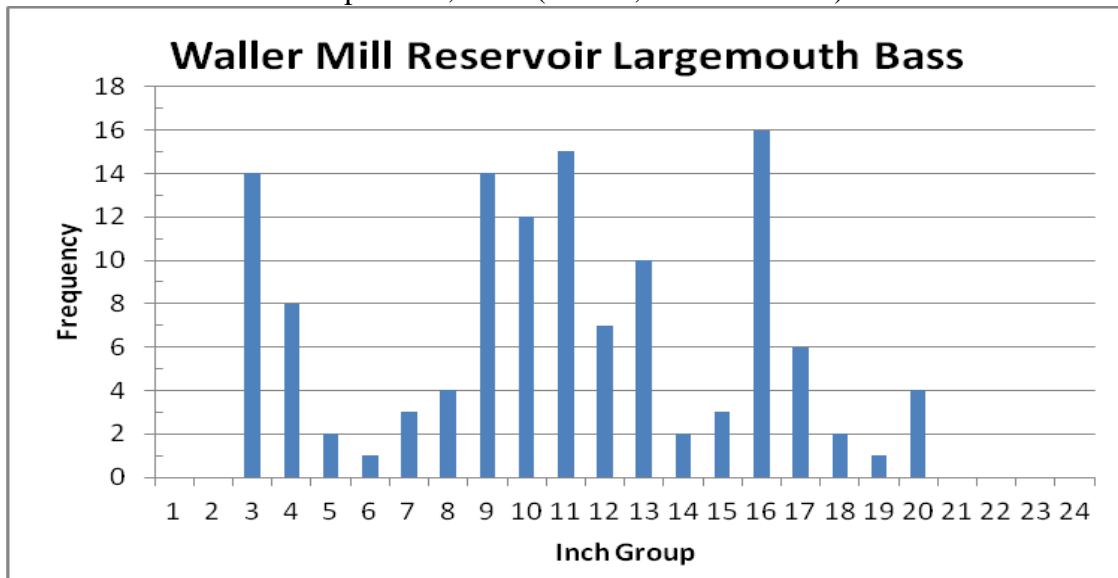
## Largemouth Bass

The largemouth bass population within Waller Mill Reservoir appears to be in good shape and reasonably balanced. A total of 124 largemouth bass were collected. The CPUE (Catch Per Unit of Effort) for largemouth bass was 93 bass/hr. This catch rate showed an increase when compared to the 2011 survey (CPUE: 78.8 bass/hr). The average sized bass showed a decline from 13.4 inches in 2011 to 11.23 inches in 2012. Refer to Table 2 for comparison of sample runs. Sample runs 1 and 2 were conducted in the upper basin of the reservoir. Runs 3 and 4 were conducted in the lower basin. The size distribution of the collected bass can be seen on the enclosed length frequency graph.

Table 2. Largemouth bass abundance values for each sampling run along with the average size, maximum lengths and CPUE (fish/hr).

Run #	1	2	3	4
# of bass	27	31	36	30
Average size	13.23"	12	10.8"	9.13"
Max size	20.91"	17.6"	20.94"	17.64"
CPUE (#/hr)	81	93	108	90

Figure 1. Length frequency of largemouth bass collected from electrofishing survey of Waller Mill Reservoir on April 23<sup>rd</sup>, 2012 (N: 124, CPUE: 93 f/hr)



The 2012 distribution showed a high proportion of bass in the 9 to 13 inch size range with a decent abundance of bass in the 16 to 20 inch range. These bass will provide a great deal of the fishing excitement. The distribution showed decent recruitment, but a slow growth rate for juvenile bass. Bass that ranged in size from 3 to 4 inches represent the 2011 year class of bass. The largest bass by length measured 20.94 inches and weighed 5.85 pounds. Our sampling efforts are just a representative picture of the fish community collected along the shoreline and various habitat structures on the survey day. The reservoir has produced a limited number of trophy largemouth bass over the years.

Larger bass may have been able to escape from the electrofishing boat or may just be living in other areas of the reservoir that were not sampled.

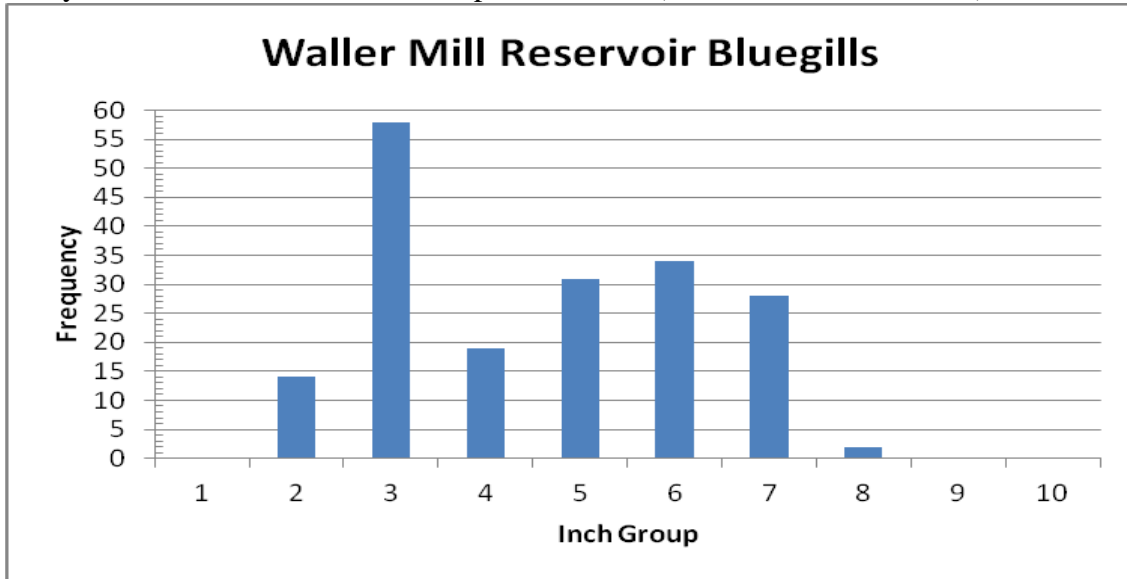
With largemouth bass being the most popular game fish in this country, it has been considered that a “preferred” bass is one that is over 15 inches in length. It is through this size classification that population dynamics are analyzed. The PSD (Proportional Stock Density) is the proportion of bass in the population over 8 inches (stock size) that are also at least 12 inches (quality-sized). The sample provided a PSD value of 61, which is a direct reflection of the 59 quality-sized bass. The sample had a total of 96 bass that were stock size or larger. A balanced bass/bluegill fishery has a bass PSD value within the 40–60 range. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of bass in the population over 8 inches that are also at least 15 inches. The RSD-P value of 33 is a direct reflection of the 32 preferred fish being collected. The 2012 PSD value was less than the 2011 value (PSD: 77). The 2012 RSD-P value (33) reflected the decreased catch rate of preferred-sized bass when compared to the 2011 survey (RSD-P: 57). The catch rate of 24 preferred-sized bass/hr ranked Waller Mill Reservoir in third place for public impoundments sampled in Region 1, District 1 during 2012. This was a drop from the first place sample found during the 2011 survey year.

Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. The higher the value, the better the condition of the fish in terms of overall body mass. The relative weight values for stock, quality, preferred and memorable bass (>8”, >12”, >15” and >20”) were 94, 96, 98 and 104 respectfully. These relative weight values showed a decline when compared to the 2011 values (stock: 96, quality: 101, preferred: 102 and memorable: 116).

## **Bluegill**

The bluegill fishery of Waller Mill Reservoir appears to consist primarily of fish in the 3 to 7 inch range. The electrofishing survey was able to collect 186 bluegills (CPUE: 139.5 bluegills/hr). This catch rate showed a favorable increase when compared to the 2011 survey (CPUE: 97.5 bluegills/hr). The size distribution can be seen on the attached length frequency graph. The average sized bluegill was 5.05 inches and showed a decline from the average length of 5.4 inches in 2011. The PSD for bluegill is the proportion of bluegill over 3.15 inches (stock size) that are also at least 5.9 inches (quality size). The bluegill PSD value of 38 showed a slight increase from the 2011 survey (PSD: 34). The collection consisted of 63 quality-sized bluegills from the total of 167 stock-sized fish. The PSD value is within the desired 20-40 range that would represent a balanced bluegill population. The survey showed a greater presence of 3 inch bluegills than what has been detected in past survey years.

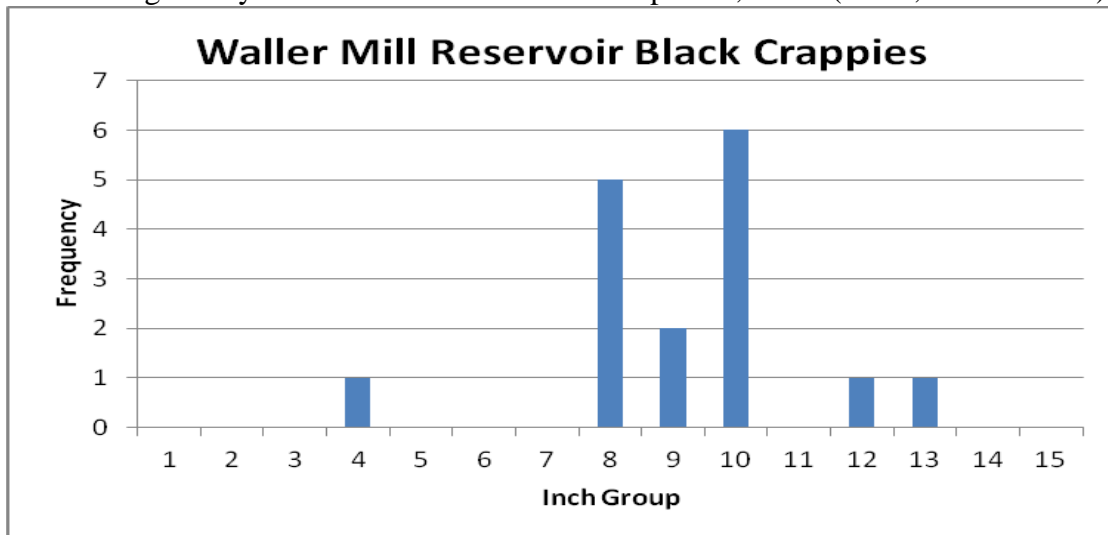
Figure 2. Length frequency distribution of bluegills collected from the electrofishing survey of Waller Mill Reservoir on April 23, 2012. (N: 186, CPUE: 139.5/hr)



### Black Crappie

The electrofishing sample collected a total of only 16 black crappies (CPUE: 12/hr). This catch rate showed a decrease from the 2011 sample (CPUE: 18/hr). The collected crappies ranged in size from 4 to 13 inches with the average size at 9.61 inches. This average size is reasonably close to the 2011 average of 9.7 inches. The majority of fish measured in the 8 to 10 inch range. Black crappies tend to school in waters deeper than bass and bluegills. Taking this into account, the typical shoreline sample can be very random as to whether or not a school is encountered during a sample run. The reservoir has potential to produce some larger black crappies in the 1.5 to 2 pound range. Anglers have managed to catch a few decent crappies over the last few years.

Figure 3. Length frequency distribution of black crappies collected from the electrofishing survey of Waller Mill Reservoir on April 23, 2012. (N: 16, CPUE: 12/hr)



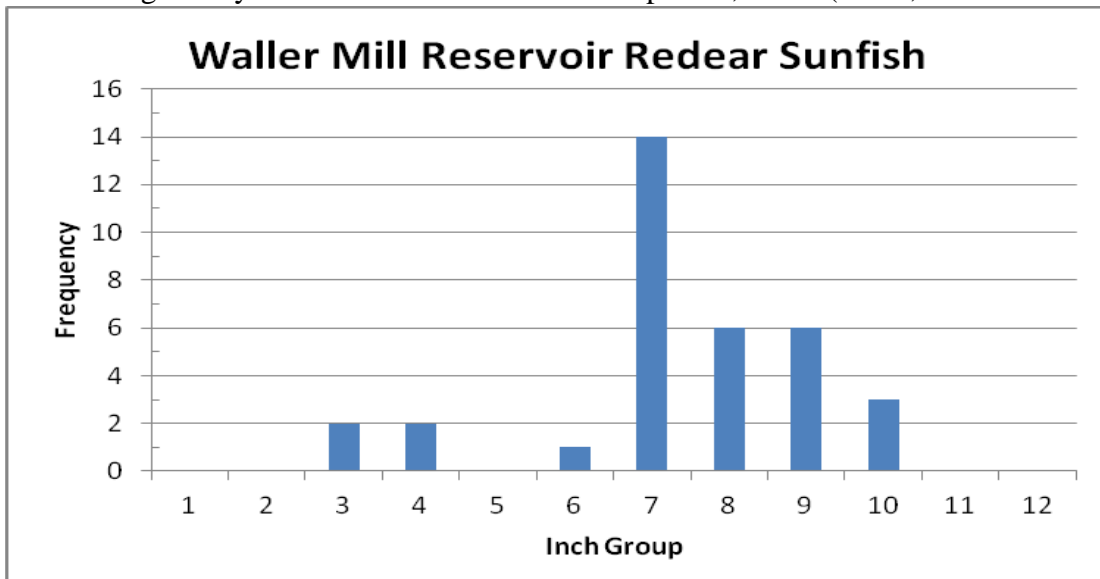
### White Perch

Waller Mill Reservoir has historically been one of the better waters to fish for white perch. Recent survey years have seen decreasing trends in catch rates during spring electrofishing surveys. The electrofishing survey was able to collect a total of only 11 white perch (CPUE: 8.3/hr). This catch rate showed another decline when compared to the 2011 survey (CPUE: 17.3/hr). Comparing catch rates of schooling fish can be difficult. The random nature of encountering a large school of white perch has a great influence on your catch rate and how the population is perceived. Waller Mill Park staff has seen some anglers harvesting large stringers of white perch over the last couple of years. The 2012 electrofishing survey showed the white perch to be in the 5 to 9 inch range. The average white perch measured 8.25 inches and the largest white perch was 9.88 inches in length.

### Redear Sunfish

The redear sunfish population appears to be in decent shape even though the abundance is limited. A total of 34 redear sunfish were collected for a CPUE of 25.5/hr. This catch rate showed an improvement from the 2011 survey (CPUE: 14.3/hr). The 2012 size distribution ranged from 3 to 10 inches. The three largest redear sunfish measured 10.24, 10.55 and 10.55 inches in length. The average length of the collected redear sunfish was 7.79 inches and showed some improvement from 2011 (average: 7.1 inches). The catch rate of redear sunfish would have been greater if the survey was conducted during early to mid May. Certain areas of the reservoir will draw spawning size fish into the shallows for the spawning season. The electrofishing survey was conducted prior to the redear sunfish spawn. Anglers will be able to spot the large crater-like nests that redear sunfish build along the sand bars of various shallow water coves.

Figure 4. Length frequency distribution of redear sunfish collected from the electrofishing survey of Waller Mill Reservoir on April 23, 2012. (N: 34, CPUE: 25.5/hr)



## **Yellow Perch**

The survey was able to collect a total of 23 yellow perch (CPUE: 17.3/hr). The 2012 catch rate showed a decline from the 2011 survey (CPUE: 36/hr). The collected perch ranged in size from 4.4 to 8.8 inches with the average size at 6.7 inches. Anglers should not expect to catch too many large yellow perch from Waller Mill Reservoir. Young anglers may find excitement from the occasional perch while fishing for sunfish species. The yellow perch population's growth potential is limited to the amount of available forage within the reservoir. The yellow perch will have to compete for forage with the bass, crappie and white perch.

## **Common Carp**

Waller Mill Reservoir has one of better carp populations within Region 1, District 1. The majority of the carp action is found within the upper basin of the reservoir. Most carp were found along the edge of shoreline brush along straight stretches of shoreline within the major creek arms. Some carp were drawn out from the cover of fallen trees. Past surveys have shown decent numbers of 6 to 8 pound carp. The 2012 survey collected/counted a total of 69 carp. This catch rate of 51.8/hr showed a minor decline from 2011 (CPUE: 54.8/hr). The upper basin provided a total of 53 carp while the lower basin only yielded 16 carp. Of the 53 carp that were measured, the average size was 22.2 inches with the largest carp measured at an impressive 29.6 inches.

## **Additional Species**

The electrofishing also revealed the presence of striped bass, brown bullhead, yellow bullhead, white catfish, American eels, pumpkinseed sunfish, gizzard shad and redbreast sunfish. These fish were found in limited abundance, but may surprise an angler from time to time. The survey collected a total of 2 striped bass from the lower basin that measured 25 and 29 inches (5.83 and 7.5 lbs). Two yellow bullheads of 11.5 and 12 inches were collected. One 8.3 inch brown bullhead was collected. One 12.6 inch white catfish was collected. Three American eels in the 14 to 23 inch range were collected. Four pumpkinseed sunfish in the 6 inch range were collected. One 14.5 inch gizzard shad was collected. Although the survey collected only one gizzard shad, the reservoir has a decent gizzard shad population that concentrates in the pelagic zones of the reservoir. The shad population provides the bulk of the forage for the striped bass and largemouth bass. A total of 24 redbreast sunfish were collected. They ranged in size from 3 to 7 inches. One bluegill/redear sunfish hybrid was also collected.

## **Electrofishing Summary**

Waller Mill Reservoir continues to provide decent fishing opportunities for people in the greater Williamsburg area. The reservoir has a good largemouth bass population with an abundance of preferred-sized bass greater than 15 inches in length. The majority of the bass tend to hold tight to the shoreline cover if they are not out chasing schools of small gizzard shad. The sunfish populations have shown some signs of improvement, but are not that abundant when compared to other public waters nearby. The redear sunfish population has some potential to produce respectable fish over 10 inches in length. Redbreast sunfish will provide some excitement from time to time for young fishermen. The yellow perch and white perch population will provide some additional action to

anglers although the perch will not be that impressive in size. Waller Mill Reservoir continues to provide an abundance of common carp. Anglers willing to try their luck on the common carp may be surprised by the number of 6 to 8 pound carp that are present. 2012 was a slow year for citations at Waller Mill Reservoir as only one citation striped bass and one citation yellow perch were reported.

### **Gill Net Survey Summary**

A gill net survey was conducted on Waller Mill Reservoir from December 10-12, 2012. Full length panel nets have been used for the last three gill net surveys (2008, 2010 and 2012) to collect additional data on the striped bass population and the present forage base of gizzard shad. Three nets of each mesh size (31.7, 50.8 and 76.2 mm bar length) were used each night with the upper basin sampled first before setting the nets in the lower basin. The 2012 gill net survey combined to collect 10 fish species.

A total of 43 striped bass were collected for a CPUE of 3.26 f/100 m<sup>2</sup>. This catch rate showed a major improvement from the 2010 survey (CPUE: 1.37 f/100 m<sup>2</sup>). The striped bass ranged in size from 16 to 32 inches with the two greatest concentrations centered within the 16 to 18 inch range and the 26 to 29 inch range. The upper basin yielded only five striped bass. The lower basin provided some greater excitement with the collection of 38 striped bass. The 2012 relative weight values for striped bass (Stock: 90, Quality: 90, Preferred: 86) showed a minor decline from the 2010 survey (Stock: 91, Quality: 91, Preferred: 87). Although the desired relative weight values of 95-100 were not reached, some of the collected striped bass were full of juvenile gizzard shad.

The gill net survey collected a total of 27 largemouth bass (CPUE: 2.05 f/100 m<sup>2</sup>). This catch rate is below the 2010 survey (CPUE: 3.0 f/100 m<sup>2</sup>). The size distribution of bass ranged from 9 to 20 inches in length. The relative weights of largemouth bass (Stock: 102, Quality: 103, Preferred: 102) showed a decline from the favorable weights found during the 2010 gill net survey (Stock: 105, Quality: 108 and Preferred: 109).

A total of 53 gizzard shad (CPUE: 4.02 f/100 m<sup>2</sup>) were collected. The catch rate showed improvement when compared to the 2010 survey (CPUE: 2.66 f/100 m<sup>2</sup>). The shad distribution ranged from 12 to 16 inches with the majority in the 12 to 13 inch range. The survey was able to collect a total of 259 white perch (CPUE: 19.66 f/100 m<sup>2</sup>). This catch rate showed an increase from the 2010 survey (CPUE: 8.84 f/100 m<sup>2</sup>). The majority of collected white perch were found in the lower basin off of shallow flats near large points. The remaining 6 species collected during the gill net survey were common carp, white catfish, black crappie, bluegill, redear sunfish and brown bullhead.